



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,663	07/14/2003	Atsushi Funaki	240076US0	4728

22850 7590 07/15/2004

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

CHOI, LING SIU

ART UNIT	PAPER NUMBER
----------	--------------

1713

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/617,663	<b>Applicant(s)</b> FUNAKI ET AL.	
	<b>Examiner</b> Ling-Siu Choi	<b>Art Unit</b> 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☐ Claim(s) 1-11 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 2 and 4 is/are allowed.
- 6) ☐ Claim(s) 1,3 and 5-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION**

1. Claims 1-11 are now pending , wherein all claims are drawn to a multi-layer hose.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1, 3, and 5-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Funaki et al. (US 2003/0162923 A1).

The present invention relates to a multi-layer fuel hose comprising

<b>inner layer (I)</b>	polymerized unit (a) based on tetrafluoroethylene
	polymerized units (b) based on ethylene and
	polymerized unit (c) based on itaconic anhydride and/or citraconic anhydride
wherein the molar ratio of (a) / (b) = 20 / 80 - 80 / 20 and the molar ratio of (c) / [(a) + (b)] = 1 / 10,000 - 5 / 100 and which has a volume flow rate = 1 - 1,000 mm <sup>3</sup> /sec	
<b>outer layer (II)</b>	polyamide 11 and/or
	polyamide 12
[terminal amino group concentration] / [terminal carboxyl group contraction] > 1	

(summary of claim 1)

Funaki et al. disclose a fluorocopolymer comprising (A) polymerized units based on tetrafluoroethylene, (B) polymerized units based on ethylene, and (C) polymerized units based on itaconic anhydride or citraconic anhydride, wherein the molar ratio of (A)/(B) is from 20/80 to 80/20; the molar ratio of (C)/[(A) + (B)] is from 1/10000 to 5/100; the volume flow rate of the fluorocopolymer is from 1 to 1000 mm<sup>3</sup>/sec (claim 1). Funaki et al. further disclose that a multilayer laminated hose can be obtained by co-extrusion of the fluorocopolymer and a non-fluorinated polymer, wherein the non-fluorinated polymer is particularly preferred to be polyamide 11 or polyamide 12 ([0007]; [0044]-[0045]; claim 11). Funaki et al. also disclose that the fluorocopolymer further contain polymerized units (D) based on  $\text{CH}_2 = \text{CX}(\text{CF}_2)_n\text{Y}$  wherein each of X and Y are independent of each other and is a hydrogen atom or a fluorine atom (claim 4). Funaki et al. furthermore disclose that an electroconductive carbon black is incorporated into the fluorocopolymer to lead to a volume resistivity at most  $1 \times 10^9 \Omega\text{-cm}$  ([0042]). It is noted that Funaki et al. are silence on the ratio of [terminal amino group concentration] / [terminal carboxyl group concentration] > 1. Attention is drawn to [0059], wherein polyamide 12 (3030JLX2, manufactured by Ube Industries, Ltd.) is used for the non-fluorinated polymer. Thus, the present claims are anticipated by the disclosure of Funaki et al..

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1713

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1, 5-11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al.

(US 2003/0035914 A1) in view of Nishi et al. (US 5,736,610).

Nishi et al.' 914 disclose a hose having a laminated structure, comprising an inner layer (A) and outer layer (B), wherein the inner layer (A) is made of ethylene/tetrafluoroethylene copolymer and outer layer (B) is made of a polyamide resin such as polyamide 12 (3030 JLX2, manufactured by Ube Industries, Ltd), the inner layer (A) being adhesive to a outer layer (B) (abstract; Example 2; claim 1). Nishi et al.' 914 further disclose the volume resistivity of the ethylene/tetrafluoroethylene copolymer is from 1 to  $10^9$   $\Omega$ -cm (claim 4). Nishi et al. further disclose that the inner layer and the outer layer are formed by co-extrusion (claim 12).

The difference between the present claims and the disclosure of Nishi et al. is the requirement of itaconic anhydride or citraconic anhydride as a comonomer of ethylene/tetrafluoroethylene copolymer.

Nishi et al.' 610 disclose that itaconic anhydride or citraconic anhydride is used as a grafting compound to provide an adhesive property of a fluorine-containing polymer (abstract; col. 4, lines 31-32 and lines 64-65). In view of such benefit, it would have been obvious to one of ordinary skill in art at the time the invention was made to incorporate itaconic anhydride or citraconic anhydride in the ethylene/tetrafluoroethylene copolymer disclosure of Nishi et al.' 914 and thereby obtain the present invention.

*Allowable Subject Matter*

6. This application contains allowable subject matter (claims 2 and 4) because the prior art of record [Funaki et al. (US 2003/0162923 A1), Nishi et al. (US 2003/0035914 A1), and Nishi et al. (US 5,736,610)], either alone or in combination, fails to teach or suggest the fluorocopolymer comprising the blend of a fluoropolymer [tetrafluoroethylene-ethylene-itaconic anhydride and/or citraconic anhydride] and ethylene/tetrafluoroethylene copolymer.

*Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.

*Ling-Siu Choi*

Ling -Siu Choi

July 7, 2004